

**CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)**

Applicant(s): Yasushi AKIYAMA et al.

Docket No.

2002JP311

Serial No.

10/519,242

Filing Date

December 22, 2004

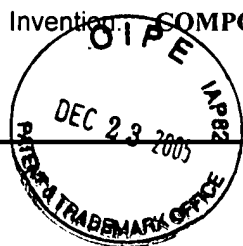
Examiner

WU, Ives J.

Group Art Unit

1713

Invention: COMPOSITION FOR ANTIREFLECTION COATING AND METHOD FOR FORMING PATTERN

I hereby certify that this Machine English Language Translation of JP 05-088598 - 8 Pages

(Identify type of correspondence)

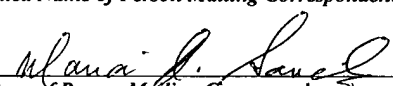
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("Express Mail" Mailing Label Number)

**Note: Each paper must have its own certificate of mailing.**

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-088598

(43)Date of publication of application : 09.04.1993

(51)Int.Cl. G03H 1/18  
B23K 1/14  
B41K 1/00  
G03H 1/20

(21)Application number : 03-252619

(71)Applicant : TOPPAN PRINTING CO LTD

(22)Date of filing : 30.09.1991

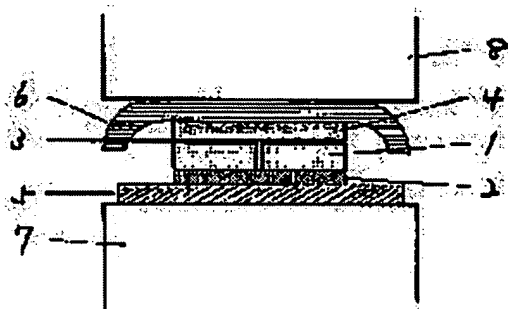
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## (54) PRODUCTION OF MULTIFACED ORIGINAL PLATE FOR REPRODUCTION OF HOLOGRAM

### (57)Abstract:

**PURPOSE:** To prevent the generation of defective transfer parts, spacings and groove traces to be generated in the case of press molding of hologram products and to allow relief patterns to be well transferred by eliminating the spacings and grooves generated between molds for duplicating the relief holograms.

**CONSTITUTION:** The relief hologram type original plate is cut to a prescribed shape and the parts to be cut are by a milling machine to grind off the ruggedness of the parts to be cut and to smooth these part so as not to generate the spacings and grooves when the parts to be cut are joined. Such original plates 1 are arrayed on a base material 2 for installation in such a manner that the smoothed parts to be cut are closely mated with each other. The installing base material 2 and the original plates 1 are placed on a surface plate 5 installed on the lower plate surface of a press machine and a backing base material 4 is superposed thereon via solder 3. Pressing under heating is executed via a heat resistant silicone rubber sheet 6 having a high thermal conductivity to join the lining base material 4 and the plural original plates 1. The installing base material 2 is then peeled and the practicable plates are produced by Ni plating.



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[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or

application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The manufacture approach of the hologram reproduction quality multiple attachment original edition characterized by cutting out the relief hologram mold original edition in a predetermined configuration, arranging two or more sheets of said original edition in on an installation base material after performing processing cutting off the irregularity of the judged section, and joining a backing base material and said original edition of two or more sheets heating and by pressurizing through a pewter.

[Claim 2] The manufacture approach of the hologram reproduction quality multiple attachment original edition according to claim 1 using a tabular pewter.

[Claim 3] The manufacture approach of the hologram reproduction quality multiple attachment original edition according to claim 1 using the backing base material which has a pewter layer on a front face.

[Claim 4] The manufacture approach of the hologram reproduction quality multiple attachment original edition according to claim 1 using the heat-resistant installation base material which has an adhesive layer on a front face.

[Claim 5] The manufacture approach of the hologram reproduction quality multiple attachment original edition according to claim 1 to 4 using the relief hologram mold original edition which damaged the rear face.

[Claim 6] The manufacture approach of the hologram reproduction quality multiple attachment original edition according to claim 1 to 5 using the backing base material which damaged the front face.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the manufacture approach of the hologram reproduction quality original edition which is used for the reproduction quality of a relief hologram and by which multiple attachment was carried out.

[0002]

[Description of the Prior Art] When the hologram reproduction quality multiple attachment original edition was manufactured conventionally, the production process described below was required.

[0003] First, Au, Ag, nickel, etc. are vapor-deposited to the hologram (a relief hologram is called hereafter) which has the minute concavo-convex configuration formed in the photoresist front face by the known approach, nickel plating is performed by making this into an electrode, and it is 100 micrometers of thickness numbers. The relief hologram mold original edition is obtained by forming nickel deposit of extent and exfoliating said nickel deposit.

[0004] Next, only the number of field attachments obtains a relief hologram replicative form by performing exfoliation processing to the front face of the relief hologram mold original edition obtained at the above-mentioned process, and performing multiple-times nickel plating again based on this original edition. The obtained relief hologram replicative form is cut out in a predetermined configuration.

[0005] On the backing base material, adhesives, the binder, the double-sided tape, etc. were used, the relief hologram replicative form of two or more sheets obtained at the above-mentioned process was pasted up, and the relief hologram reproduction quality multiple attachment original edition had been obtained.

[0006]

[Problem(s) to be Solved by the Invention] However, in the above conventional techniques, since it judged by applying the force physically in case a relief hologram replicative form is cut out, it was impossible to have performed multiple attachment which the judged field deformed and was filled up with the relief hologram replicative form that there is completely no clearance.

[0007] Therefore, a clearance and a slot occur between relief hologram replicative forms, when reproducing the practical use version (= the version used for reproducing a final hologram product) by nickel plating based on the hologram reproduction quality multiple attachment original edition obtained by the above-mentioned approach, nickel deposit is formed in the clearance and slot between relief hologram replicative forms, the mold release from the original edition becomes difficult, or weld flash generates.

[0008] This invention by losing the clearance and slot which are produced between relief hologram replicative forms in the manufacture approach of the hologram reproduction quality multiple attachment original edition Make easy mold release from the original edition (the practical use version) after the process of reproduction of the practical use version by nickel plating, and generation of weld flash is lost. Let it be a key objective to prevent generating of the defect imprint section, the clearance, and \*\*\*\*

which are produced when carrying out press forming of the hologram product using said practical use version, and to enable it to imprint a good relief pattern. Moreover, the hologram mold original edition and a backing base material aim at obtaining the hologram reproduction quality multiple attachment original edition moreover firmly joined to rear-spring-supporter homogeneity by the whole surface.  
[0009]

[Means for Solving the Problem] In order to attain the object mentioned above, by this invention, the relief hologram mold original edition is cut out in a predetermined configuration, after performing processing cutting off the irregularity of the judged section, two or more sheets of said original edition are arranged in on an installation base material, and a backing base material and said original edition of two or more sheets are joined heating and by pressurizing through a pewter.

[0010] Moreover, in the 2nd invention, heating and application of pressure are performed using a tabular pewter. In the 3rd invention, the backing base material which has a pewter layer is used for a front face. In the 4th invention, the heat-resistant installation base material which has an adhesive layer is used for a front face. In the 5th invention, the relief hologram mold original edition which damaged the rear face is used. In the 6th invention, the backing base material which damaged the front face is used.

[0011] Hereafter, this invention is explained in more detail based on a drawing. The judged section which cut out the relief hologram mold original edition created by the known approach in the predetermined configuration, and transformed it at the time of decision is cut with a milling machine, the irregularity of the judged section is shaved off, and when it joins, it graduates to the appearance which neither a clearance nor a slot produces. It arranges so that the judged section which graduated the relief hologram mold original edition 1 with which processing of the judged section was performed on the installation base material 2 may be doubled without a clearance.

[0012] After tacking carrying out of the relief hologram mold original edition 1 in respect of having a minute concavo-convex configuration (relief side) on the installation base material 2, On the surface plate 5 installed in the lower circle side 7 of the press machine in which heating more than the melting temperature of a pewter and forced cooling to ordinary temperature are possible, place on the installation base material 2 by turning up the side which carried out [ tacking ], and a pewter 3 is minded. After performing appearance hot press which goes up the backing base material 4 to pewter melting temperature with the structure through superposition and the thermally conductive heat-resistant high silicon rubber sheet 6, it cools to the ordinary temperature below pewter melting temperature, with this condition held. ( Drawing 1 )

[0013] Subsequently, after exfoliating the installation base material 2 and degreasing a relief front face, exfoliation processing is performed and the practical use version is produced by nickel plating.

[0014] A rear face may be damaged as the relief hologram mold original edition 1. ( Drawing 2 )

You may perform damaging mechanically with an about [ # 200-400 ] coarse sandpaper etc. as an approach of damaging a rear face, performing surface treatment chemically, etc. by the known approach.

[0015] The glass-fabrics pressure sensitive adhesive sheet which may be the heat-resistant base material which has an adhesive layer on a front face as an installation base material 2, for example, has thermal resistance is used.

[0016] As a pewter 3, the thing of the low-melt point point below 200 \*\* may have desirable melting temperature, and the configuration may be a tabular thing or may be a fragment.

[0017] As a backing base material 4, it is thickness 200, for example. mum nickel plate of extent is used. Moreover, the pewter layer may be formed in the front face and the front face of the side which counters the relief hologram mold original edition 1 may be damaged. You may perform damaging mechanically with an about [ # 200-400 ] coarse sandpaper etc. as an approach of damaging a front face, performing surface treatment chemically, etc. by the known approach.

[0018]

[Function] In order [ which cuts the judged section which deformed at the time of decision with a milling machine, and shaves off the irregularity of the judged section, and neither a clearance nor a slot produces in this invention when it joins after cutting out the relief hologram mold original edition in a

predetermined configuration ] to graduate like, Since the pewter fused into the clearance and slot between hologram molds flows in and it buries even if it was hard to generate a clearance and a slot and they occurred among hologram molds, multiple attachment from which said part serves as a smooth flat surface can be performed.

[0019] Moreover, since the thermal bond by the pewter can be performed carrying out temporary adhesion of the relief hologram mold original edition of two or more sheets on said base material by using for a front face the heat-resistant installation base material which has an adhesive layer, there are few location gaps and the hologram reproduction quality multiple attachment original edition with a very high precision can be manufactured.

[0020] Moreover, the relief hologram mold original edition and a backing base material can obtain the original edition of hologram reproduction quality joined by the thickness of homogeneity on the whole surface by making a pewter into a tabular thing (or using for a backing base material front face what has a pewter layer).

[0021] Moreover, a touch area with the pewter through both junction will be increased by damaging the rear face of the relief hologram mold original edition, or (reaching) the front face of a backing base material, and further, since it will enter into the irregularity of the front face whose fused pewter was ruined, both bonding strength will increase mechanically (since an anchor effect will improve).

[0022]

[Example] Hereafter, the example of this invention is explained.

[0023] 1) < example 1 ingredient: -- nickel hologram mold original edition: -- a two-sheet glass cross seat (those with an adhesive layer)

Backing base material (nickel rolled plate: board thickness 200 mum)

Cream pewter (tin bismuth eutectic and melting point 139 \*\*)

2) Device : milling machine heating / cooling press silicone rubber sheet metal plate (dimension after junction of the hologram nickel version)

Knife [0024] The edge of nickel hologram mold original edition of two sheets cut out in the predetermined configuration is horizontally deleted with a milling machine, and the irregularity of the judged section which deformed at the time of decision, or a cross section is deleted. As shown in drawing 1 , the above-mentioned nickel hologram mold original edition 1 is set in respect of decision, and is put in order, and it carries out [ tacking ] in respect of having relief with the heat-resisting-glass cross seat 2 which has adhesiveness in a front face.

[0025] Melting temperature to the joint and periphery of nickel hologram mold original edition 1 which carried out [ tacking ] The cream pewter which is 139 degrees C is applied with a knife. On the surface plate 5 installed in the lower circle side 7 of the press machine in which heating more than 200 \*\* and forced cooling to ordinary temperature are possible It places by turning up the side which carried out [ tacking ] of the glass-fabrics pressure sensitive adhesive sheet 2, and is board thickness 200. mum It doubles with the nickel rolled plate 4. After stoving temperature whenever 140 \*\*, the 10 kgf/cm load 2, and the conditions for holding-time 10 seconds perform hot press with the structure through the thermally conductive heat-resistant high silicon rubber sheet 6, it cools to 100 \*\*, with this condition held.

[0026] After multiple attachment, after exfoliating the glass-fabrics pressure sensitive adhesive sheet 2 from the hologram reproduction quality multiple attachment original edition cooled to the room temperature and degreasing a front face, exfoliation processing is performed and the hologram reproduction quality multiple attachment duplicate version (the practical use version) is produced by nickel plating.

[0027] The example of manufacture of the hologram reproduction quality multiple attachment original edition which damaged the <example 2> contact surface is shown.

1) ingredient: -- nickel hologram mold original edition: -- a four-sheet glass cross seat (those with an adhesive layer)

Backing base material (nickel rolled plate: board thickness 200 mum)

Cream pewter (tin bismuth eutectic and melting point 139 \*\*)

• 2) Device : milling machine sandpaper (#320)

Heating / cooling press silicone rubber sheet metal plate (dimension after junction of the hologram nickel version)

[0028] The edge of nickel hologram reproduction quality original edition of four sheets cut out in the predetermined configuration is horizontally deleted with a milling machine, and the irregularity of the judged section which deformed at the time of decision, or a cross section is deleted. As shown in drawing 2, the above-mentioned nickel hologram mold original edition 50 is set in respect of decision, and is put in order, and after damaging a tacking meal and a rear face lightly with a sandpaper in respect of relief, the nickel plate 53 used as the cream pewter 52 and the backing base material which damaged the front face with the sandpaper is piled up with the glass-fabrics adhesiveness sheet 51 which has thermal resistance. On the surface plate 55 which installed the hologram mold original edition 50 and the pewter 52 which were put on the above-mentioned structure, and the nickel plate 53 in the lower circle side 56 of the press machine in which heating more than 200 \*\* and cooling to ordinary temperature are possible With the structure which placed with the glass-fabrics pressure sensitive adhesive sheet 51 by turning down the side which carried out [ tacking ], and minded the thermally conductive heat-resistant high silicon rubber sheet 54, stoving temperature whenever 140 \*\*, After performing hot press on the 10 kgf/cm load 2 and the conditions for holding-time 10 seconds, it cools to 100 \*\*, with this condition held.

[0029] After multiple attachment, after exfoliating the glass-fabrics pressure sensitive adhesive sheet 51 from the hologram multiple attachment original edition cooled to the room temperature and degreasing a front face, exfoliation processing is performed and the hologram reproduction quality multiple attachment duplicate version (the practical use version) is produced by nickel plating.

[0030]

[Effect of the Invention] The effectiveness of this invention is enumerated as follows.

\*\* The replicative form for multiple attachment of a smooth front face without a clearance or a slot is producible among hologram molds.

\*\* The replicative form which the hologram mold and the backing base material joined by uniform thickness on the whole surface can be created, at an after process, in case the practical use version by nickel plating (electrolytic plating) is created, distribution of a current is uniform and a surface state can produce the good practical use version.

\*\* The stable firm replicative form to which the hologram mold and the backing base material were joined by high reinforcement is producible.

[0031]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the explanatory view showing the condition of manufacturing the hologram reproduction quality multiple attachment original edition, by this invention.

[Drawing 2] It is the explanatory view showing the condition of manufacturing the hologram reproduction quality multiple attachment original edition, according to other examples of this invention.

[Description of Notations]

- 1 50 -- Relief hologram mold original edition
- 2 51 -- Installation base material
- 3 52 -- Pewter
- 4 53 -- Backing base material
- 5 55 -- Surface plate
- 6 54 -- Silicon rubber sheet
- 7 56 -- Press machine lower circle side
- 8 57 -- The press face of a board on board

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